

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-49 (canceled)

50. (previously presented) A method, comprising:

- a) initiating a call to a remote telephone interface at a first telephone interface;
- b) generating a first ring signal at a second telephone interface in response to said initiating;
- c) generating an off hook signal at said second telephone interface and establishing a connection toward said remote telephone interface over a packet data network that resides between said second telephone interface and said remote telephone interface, said generating an off hook signal and said establishing a connection both a consequence of said generating a first ring signal;
- d) generating a second ring signal at said remote telephone interface and starting a timer that measures a time period over which said second ring signal is applied at said remote telephone interface, said generating a second ring signal and said starting a timer both a consequence of said establishing a connection;
- e) ceasing said second ring signal and sending a message through said packet data network toward said second telephone interface, said ceasing said second ring signal and said sending a message both a consequence of said timer having expired; and

f) ceasing said off hook signal and asserting an on hook signal at said second telephone interface, said ceasing said off hook signal and said asserting said on hook signal both a consequence of said sending a message.

51. (previously presented) The method of claim 50 wherein said timer lasts within a range of 2 to 3 minutes inclusive.

52. (previously presented) The method of claim 50 wherein said first telephone interface resides at a PBX.

53. (previously presented) The method of claim 52 wherein said second telephone interface resides at a second PBX.

54. (previously presented) The method of claim 52 wherein said second telephone interface resides at a Central Office (CO).

55. (previously presented) The method of claim 50 wherein said first telephone interface resides at a Central Office (CO).

56. (previously presented) The method of claim 55 wherein said second telephone interface resides at a second PBX.

57. (previously presented) The method of claim 55 wherein said second telephone interface resides at a Central Office (CO).

58. (previously presented) The method of claim 50 wherein said packet data network further comprises an Internet Protocol (IP) network.

59. (previously presented) The method of claim 50 wherein said packet data network further comprises a Frame Relay network.

60. (previously presented) The method of claim 50 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

61. (previously presented) The method of claim 50 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

Claims 62 - 71 (canceled)

72. (previously presented) A network arrangement, comprising:

- a) means for initiating a call to a remote telephone interface at a first telephone interface;
- b) means for generating a first ring signal at a second telephone interface in response to said initiating;
- c) means for generating an off hook signal at said second telephone interface and establishing a connection toward said remote telephone interface over a packet data network that resides between said second telephone

interface and said remote telephone interface, said generating an off hook signal and said establishing a connection both a consequence of said generating a first ring signal;

d) means for generating a second ring signal at said remote telephone interface and starting a timer that measures a time period over which said second ring signal is applied at said remote telephone interface, said generating a second ring signal and said starting a timer both a consequence of said establishing a connection;

e) means for ceasing said second ring signal and sending a message through said packet data network toward said second telephone interface, said ceasing said second ring signal and said sending a message both a consequence of said timer having expired; and

f) means for ceasing said off hook signal and asserting an on hook signal at said second telephone interface, said ceasing said off hook signal and said asserting said on hook signal both a consequence of said sending a message.

73. (previously presented) The network arrangement of claim 72 wherein said timer lasts within a range of 2 to 3 minutes inclusive.

74. (previously presented) The network arrangement of claim 72 wherein said first telephone interface resides at a PBX.

75. (previously presented) The network arrangement of claim 74 wherein said second telephone interface resides at a second PBX.

76. (previously presented) The network arrangement of claim 74 wherein said second telephone interface resides at a Central Office (CO).

77. (previously presented) The network arrangement of claim 72 wherein said first telephone interface resides at a Central Office (CO).

78. (previously presented) The network arrangement of claim 77 wherein said second telephone interface resides at a second PBX.

79. (previously presented) The network arrangement of claim 77 wherein said second telephone interface resides at a Central Office (CO).

80. (previously presented) The network arrangement of claim 72 wherein said packet data network further comprises an Internet Protocol (IP) network.

81. (previously presented) The network arrangement of claim 72 wherein said packet data network further comprises a Frame Relay network.

82. (previously presented) The network arrangement of claim 72 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

83. (previously presented) The network arrangement of claim 72 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

Claims 84 – 91 (canceled)

92. (currently amended) A method, comprising:

a) generating a ring signal at a remote telephone interface and starting a timer that measures a time period over which said ring signal is applied at said remote telephone interface, said generating a ring signal and said starting a timer both a consequence of a connection that was established toward said remote telephone interface over a packet data network in order to place a call through said remote telephone interface;

b) ceasing said ring signal and sending a message in response to said timer expiring, said sending a message further comprising sending said message over said packet data network to a system that initiated said connection, said system having initiated said connection in response to a ring signal observed at a telephone interface maintained by said system; and

c) creating an “on-hook” signal at said telephone interface maintained by said system as a consequence of said system having received said message.

93. (previously presented) The method of claim 92 further wherein said timer lasts within a range of 2 to 3 minutes inclusive.

94. (previously presented) The method of claim 92 wherein said packet data network further comprises an Internet Protocol (IP) network.

95. (previously presented) The method of claim 92 wherein said packet data network further comprises a Frame Relay network.

96. (previously presented) The method of claim 92 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

97. (previously presented) The method of claim 92 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

98. (previously presented) The method of claim 92 wherein said remote telephone interface resides at a PBX.

99. (previously presented) The method of claim 92 wherein said remote telephone interface reside at a central office (CO).

100. (previously presented) An apparatus, comprising:

- a) means for providing a ring signal at a remote telephone interface as consequence of a connection that was established toward said remote telephone interface over a packet data network;
- b) timer means that measures a time period over which said ring signal is applied at said remote telephone interface;

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c) means for ceasing said ring signal, said ceasing in response to said timer expiring;

d) means for sending a message, in response to said timer expiring, over said packet data network to a system that initiated said connection, said system having initiated said connection in response to a ring signal observed at a telephone interface; and

e) means for providing an "on-hook" signal at said telephone interface as a consequence of said message having been received by said system.

101. (currently amended) The apparatus of claim 102 ~~further~~ 100 wherein said timer lasts within a range of 2 to 3 minutes inclusive.

102. (previously presented) The apparatus of claim 100 wherein said packet data network further comprises an Internet Protocol (IP) network.

103. (previously presented) The apparatus of claim 100 wherein said packet data network further comprises a Frame Relay network.

104. (previously presented) The apparatus of claim 100 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

105. (previously presented) The method of claim 100 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

106. (previously presented) The method of claim 100 wherein said remote telephone interface resides at a PBX.

107. (previously presented) The method of claim 92 wherein said remote telephone interface reside at a central office (CO).

108. (previously presented) An apparatus, comprising:

a first system communicatively coupled to a second system through a packet network;

said first system comprising:

a) a timer, said timer to measure a time period over which a ring signal is applied;

b) a telephone interface where said ring signal is generated;

c) a first interface to said packet network, said first interface from where a message is sent from said first system to said second system if said timer expires;

said second system comprising:

a) a second interface to said packet network, said second interface where said message is received;

b) a third interface that transitions to an on hook state in response to said message being received.

109. (previously presented) The apparatus of claim 108 where said second system further comprises a VOPS control system communicatively coupled to said second interface and said interface.

110. (previously presented) The apparatus of claim 108 wherein said third interface is a PBX interface.

111. (previously presented) The apparatus of claim 108 wherein said third interface is a CO interface.

112. (previously presented) The apparatus of claim 108 wherein said third interface is a PSTN interface.

113. (previously presented) The apparatus of claim 108 wherein said timer is a configurable timer.

114. (previously presented) The apparatus of claim 108 wherein said timer is a fixed timer.

115. (previously presented) The apparatus of claim 108 wherein said packet network further comprises an Internet Protocol (IP) network.

116. (previously presented) The apparatus of claim 108 wherein said packet network further comprises a Frame Relay network.

117. (previously presented) The apparatus of claim 108 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

118. (previously presented) The apparatus of claim 108 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

119. (currently amended) The apparatus of claim 108 ~~further comprising~~

wherein said second system is a multiservice access concentrator (MAC)

*El
Cntr*
capable of:

receiving at least one data stream and at least one voice channel;

packetizing said received at least one data stream and packetizing

said at least one voice channel;

multiplexing said packetized at least one data stream and said

packetized at least one voice channel into a transport stream; and,

providing said transport stream to said packet network using a

configurable trunk

wherein, said MAC comprises a CPU communicatively coupled to a plurality of ports, said ports from where said data stream and voice channel are said received and from where said transport stream is said provided, said CPU coupled to memory.

120. (previously presented) A method, comprising:

- a) detecting a ring signal at a telephony interface as a consequence of a call attempting to be established through said telephony interface to a remote location, said call destined for said remote location over a packet network that exists between said remote location and said telephony interface;
- b) generating an off hook signal at said telephony interface to respond to said ring signal and generating a communication over said packet network to cause said remote location to recognize said attempting;
- c) receiving a message from said packet network that indicates said attempting should be terminated; and,
- d) causing said telephony interface, as a consequence of said receiving of said message, to replace said off said hook signal with a signal indicative of an on hook or idle state.

121. (previously presented) The method of claim 120 wherein said ring signal is received from a PBX.

122. (previously presented) The method of claim 120 wherein said ring signal is received from a CO.

123. (previously presented) The method of claim 120 wherein said ring signal is received from a PSTN.

124. (previously presented) The method of claim 120 wherein said packet network further comprises an Internet Protocol (IP) network.

125. (previously presented) The method of claim 120 wherein said packet network further comprises a Frame Relay network.

126. (previously presented) The method of claim 120 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

127. (previously presented) The method of claim 120 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

128. (previously presented) The method of claim 120 wherein said generating a communication over said packet network further comprises creating a connection to said remote location through said packet network.

129. (previously presented) The method of claim 120 wherein said remote location is identified as the destination of said call by way of:

interaction with the caller of said call by presenting said caller with a secondary dial tone and collecting DTMF digits from said caller;

or,

automatically based upon the fact that said ring signal was detected at said particular telephony interface.

130. (previously presented) The method of claim 120 further comprising handling another call over said telephony interface after said replacement because said telephony interface was made available by said replacement.

131. (previously presented) A computer readable medium containing executable instructions which when executed in a processing system, causes the system to perform a method, the method comprising:

a) causing an off hook signal to be generated at a telephony interface in response to a ring signal having been detected at said telephony interface, said ring signal for a call that is attempting to be established through said telephony interface and a packet network to a remote location, where, said packet network resides between said telephony interface and said remote location

and

generating a communication over said packet network to cause said remote location to recognize said attempting; and,

b) causing said telephony interface to replace said off said hook signal with a signal indicative of an on hook or idle state in response to a message having been received from said network that indicates said attempting should be terminated.

132. (previously presented) The computer readable medium of claim 131 wherein said telephony interface can receive said ring signal from a PBX.

133. (previously presented) The computer readable medium of claim 131 wherein said telephony interface can receive said ring signal from a CO.

134. (previously presented) The computer readable medium of claim 131 wherein said telephony interface can receive said ring signal from a PSTN.

135. (previously presented) The computer readable medium of claim 131 wherein said packet network further comprises an Internet Protocol (IP) network.

136. (previously presented) The computer readable medium of claim 131 wherein said packet network further comprises a Frame Relay network.

137. (previously presented) The computer readable medium of claim 131 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

138. (previously presented) The computer readable medium of claim 131 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

139. (previously presented) The computer readable medium of claim 131 wherein said generating a communication over said packet network further comprises causing a connection to be created over said remote location through said packet network.

140. (previously presented) The computer readable medium of claim 131 wherein said method further comprises identifying said remote location as the destination of said call by way of:

interaction with the caller of said call by presenting said caller with a secondary dial tone and collecting DTMF digits from said caller; or,
automatically based upon the fact that said ring signal was detected at said particular telephony interface.

141. (previously presented) The computer readable medium of claim 131 wherein said method further comprises handling another call over said telephony interface after said replacement because said telephony interface was made available by said replacement.

142. (previously presented) An apparatus, comprising:

a) first means for receiving a ring signal as a consequence of a call attempting to be established through said first means to a remote location, said call destined for said remote location over a packet network that exists between said first means and said remote location;
b) second means for generating an off hook signal at said first means to respond to said ring signal and generating a communication over said packet network to cause said remote location to recognize said attempting; and,

c) third means for receiving a message from said packet network
that indicates said attempting should be terminated,
wherein, said second means further comprises means for causing
said telephony interface, as a consequence of said receiving of said
message, to replace said off said hook signal with a signal indicative of an
on hook or idle state.

143. (previously presented) The apparatus of claim 142 wherein said first
means can receive said ring signal from a PBX.

144. (previously presented) The apparatus of claim 142 wherein said first
means can receive said ring signal from a CO.

145. (previously presented) The apparatus of claim 142 wherein said first
means can receive said ring signal from a PSTN.

146. (previously presented) The apparatus of claim 142 wherein said packet
network further comprises an Internet Protocol (IP) network.

147. (previously presented) The apparatus of claim 142 wherein said packet
network further comprises a Frame Relay network.

148. (previously presented) The apparatus of claim 142 wherein said packet
data network further comprises a High level Data Link Control (HDLC) network.

149. (previously presented) The apparatus of claim 142 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

150. (previously presented) The apparatus of claim 142 wherein said second means for generating a communication over said packet network further comprises means for creating a connection to said remote location through said packet network.

151. (previously presented) An apparatus, comprising:

a multiservice access concentrator comprising a voice over packet call control system that is communicatively coupled to a:

a) a telephony interface to receive a ring signal as a consequence of a call attempting to be established through said multiservice access concentrator to a remote location, said call destined for said remote location over a packet network that exists between said multiservice access concentrator and said remote location, said telephony interface to also provide an off hook signal so that said multiservice access concentrator can respond to said ring signal; and,

b) a packet network interface from where a communication is sent to said remote location through said packet network to cause said remote location to recognize said attempting, and from where a later received message is received that indicates said attempting

should be terminated so as to cause said multiservice access concentrator to initiate replacement of said off hook signal with a signal indicative of an on hook or idle state.

152. (previously presented) The apparatus of claim 151 wherein said telephony interface is coupled to a PBX.

153. (previously presented) The apparatus of claim 151 wherein said telephony interface is coupled to a CO.

154. (previously presented) The apparatus of claim 151 wherein said telephony interface is coupled to a PSTN.

155. (previously presented) The apparatus of claim 151 wherein said packet network further comprises an Internet Protocol (IP) network.

156. (previously presented) The method of claim 151 wherein said packet network further comprises a Frame Relay network.

157. (previously presented) The method of claim 151 wherein said packet data network further comprises a High level Data Link Control (HDLC) network.

158. (previously presented) The method of claim 151 wherein said packet data network further comprises an Asynchronous Transfer Mode (ATM) network.

159. (previously presented) The method of claim 151 wherein said communication causes a connection to be created between said multiservice access concentrator and said remote location through said packet network.

160. (previously presented) The method of claim 151 wherein said remote location is identified as the destination of said call by way of:

interaction with the caller of said call by presenting said caller with a secondary dial tone and collecting DTMF digits from said caller;

or,

automatically based upon the fact that said ring signal was detected at said particular telephony interface.